WE CLAIM:

1. A protein derived from an enterically transmitted non-A/non-B viral hepatitis agent whose genome contains a region which is homologous to a coding region of the 1.33 kb DNA EcoRI insert present in plasmid pTZKF1(ET1.1) carried in E. coli strain BB4 and having ATCC deposit no. 67717.

2. The protein of claim 1, which is encoded by a complete coding region within said 1.33 kb EcoRI insert.

3. A recombinant protein derived from an enterically transmitted nonA/nonB viral hepatitis agent whose genome contains a region which is homologous to a coding region of a DNA molecule having a first sequence (SEQ ID NO.1):

```
AGACCTGTCC CTGTTGCAGC TGTTCTACCA CCCTGCCCCG AGCTCGAACA GGGCCTTCTC      60
TACCTGCCCC AGGAGCTCAC CACCTGTGAT AGTGTCGTAA CATTTGAATT AACAGACATT     120
GTGCACTGCC GCATGGCCGC CCCGAGCCAG CGCAAGGCCG TGCTGTCCAC ACTCGTGGGC     180
CGCTACGGCG GTCGCACAAA GCTCTACAAT GCTTCCCACT CTGATGTTCG CGACTCTCTC     240
GCCCGTTTTA TCCCGGCCAT TGGCCCCGTA CAGGTTACAA CTTGTGAATT GTACGAGCTA     300
GTGGAGGCCA TGGTCGAGAA GGGCCAGGAT GGCTCCGCCG TCCTTGAGCT TGATCTTTGC     360
AACCGTGACG TGTCCAGGAT CACCTTCTTC CAGAAAGATT GTAACAAGTT CACCACAGGT     420
GAGACCATTG CCCATGGTAA AGTGGGCCAG GGCATCTCGG CCTGGAGCAA GACCTTCTGC     480
GCCCTCTTTG GCCCTTGGTT CCGCGCTATT GAGAAGGCTA TTCTGGCCCT GCTCCCTCAG     540
GGTGTGTTTT ACGGTGATGC CTTTGATGAC ACCGTCTTCT CGGCGGCTGT GGCCGCAGCA     600
AAGGCATCCA TGGTGTTTGA GAATGACTTT TCTGAGTTTG ACTCCACCCA GAATAACTTT     660
TCTCTGGGTC TAGAGTGTGC TATTATGGAG GAGTGTGGGA TGCCGCAGTG GCTCATCCGC     720
CTGTATCACC TTATAAGGTC TGCGTGGATC TTGCAGGCCC CGAAGGAGTC TCTGCGAGGG     780
TTTTGGAAGA AACACTCCGG TGAGCCCGGC ACTCTTCTAT GGAATACTGT CTGGAATATG     840
GCCGTTATTA CCCACTGTTA TGACTTCCGC GATTTTCAGG TGGCTGCCTT TAAAGGTGAT     900
```

GATTCGATAG TGCTTTGCAG TGAGTATCGT CAGAGTCCAG GAGCTGCTGT CCTGATCGCC 960
GGCTGTGGCT TGAAGTTGAA GGTAGATTTC CGCCCGATCG GTTTGTATGC AGGTGTTGTG 1020
GTGGCCCCCG GCCTTGGCGC GCTCCCTGAT GTTGTGCGCT TCGCCGGCCG GCTTACCGAG 1080
AAGAATTGGG GCCCTGGCCC TGAGCGGGCG GAGCAGCTCC GCCTCGCTGT TAGTGATTTC 1140
CTCCGCAAGC TCACGAATGT AGCTCAGATG TGTGTGGATG TTGTTTCCCG TGTTTATGGG 1200
GTTTCCCCTG GACTCGTTCA TAACCTGATT GGCATGCTAC AGGCTGTTGC TGATGGCAAG 1260
GCACATTTCA CTGAGTCAGT AAAACCAGTG CTCGA 1295

a second sequence (SEQ ID NO.5):

TCGAGCACTG GTTTTACTGA CTCAGTGAAA TGTGCCTTGC CATCAGCAAC AGCCTGTAGC 60
ATGCCAATCA GGTTATGAAC GAGTCCAGGG GAAACCCCAT AAACACGGGA AACAACATCC 120
ACACACATCT GAGCTACATT CGTGAGCTTG CGGAGGAAAT CACTAACAGC GAGGCGGAGC 180
TGCTCCGCCC GCTCAGGGCC AGGGCCCCAA TTCTTCTCGG TAAGCCGGCC GGCGAAGCGC 240
ACAACATCAG GGAGCGCGCC AAGGCCGGGG GCCACCACAA CACCTGCATA CAAACCGATC 300
GGGCGGAAAT CTACCTTCAA CTTCAAGCCA CAGCCGGCGA TCAGGACAGC AGCTCCTGGA 360
CTCTGACGAT ACTCACTGCA AAGCACTATC GAATCATCAC CTTTAAAGGC AGCCACCTGA 420
AAATCGCGGA AGTCATAACA GTGGGTAATA ACGGCCATAT TCCAGACAGT ATTCCATAGA 480
AGAGTGCCGG GCTCACCGGA GTGTTTCTTC CAAAACCCTC GCAGAGACTC CTTCGGGGCC 540
TGCAAGATCC ACGCAGACCT TATAAGGTGA TACAGGCGGA TGAGCCACTG CGGCATCCCA 600
CACTCCTCCA TAATAGCACA CTCTAGACCC AGAGAAAAGT TATTCTGGGT GGAGTCAAAC 660
TCAGAAAAGT CATTCTCAAA CACCATGGAT GCCTTTGCTG CGGCCACAGC CGCCGAGAAG 720
ACGGTGTCAT CAAAGGCATC ACCGTAAAAC ACACCCTGAG GGAGCAGGGC CAGAATAGCC 780
TTCTCAATAG CGCGGAACCA AGGGCCAAAG AGGGCGCAGA AGGTCTTGCT CCAGGCCGAG 840
ATGCCCTGGC CCACTTTACC ATGGGCAATG GTCTCACCTG TGGTGAACTT GTTACAATCT 900
TTCTGGAAGA AGGTGATCCT GGACACGTCA CGGTTGCAAA GATCAAGCTC AAGGACGGCG 960
GAGCCATCCT GGCCCTTCTC GACCATGGCC TCCACTAGCT CGTACAATTC ACAAGTTGTA 1020
ACCTGTACGG GGCCAATGGC CGGGATAAAA CGGGCGAGAG AGTCGCGAAC ATCAGAGTGG 1080
GAAGCATTGT AGAGCTTTGT GCGACCGCCG TAGCGGCCCA CGAGTGTGGA CAGCACGGCC 1140
TTGCGCTGGC TCGGGGCGGC CATGCGGCAG TGCACAATGT CTGTTAATTC AAATGTTACG 1200

ACACTATCAC AGGTGGTGAG CTCCTGGGGC AGGTAGAGAA GGCCCTGTTC GAGCTCGGGG 1260

CAGGGTGGTA GAACAGCTGC AACAGGGACA GGTCT 1295

a third sequence (SEQ ID NO.6):

AGGCAGACCA CATATGTGGT CGATGCC ATGGAGGCCC ATCAGTTTAT TAAGGCTCCT 57

GGCATCACTA CTGCTATTGA GCAGGCTGCT CTAGCAGCGG CCAACTCTGC CCTGGCGAAT 117

GCTGTGGTAG TTAGGCCTTT TCTCTCTCAC CAGCAGATTG AGATCCTCAT TAACCTAATG 177

CAACCTCGCC AGCTTGTTTT CCGCCCCGAG GTTTTCTGGA ATCATCCCAT CCAGCGTGTC 237

ATCCATAACG AGCTGGAGCT TTACTGCCGC GCCCGCTCCG GCCGCTGTCT TGAAATTGGC 297

GCCCATCCCC GCTCAATAAA TGATAATCCT AATGTGGTCC ACCGCTGCTT CCTCCGCCCT 357

GTTGGGCGTG ATGTTCAGCG CTGGTATACT GCTCCCACTC GCGGGCCGGC TGCTAATTGC 417

CGGCGTTCCG CGCTGCGCGG GCTTCCCGCT GCTGACCGCA CTTACTGCCT CGACGGGTTT 477

TCTGGCTGTA ACTTTCCCGC CGAGACTGGC ATCGCCCTCT ACTCCCTTCA TGATATGTCA 537

CCATCTGATG TCGCCGAGGC CATGTTCCGC CATGGTATGA CGCGGCTCTA TGCCGCCCTC 597

CATCTTCCGC CTGAGGTCCT GCTGCCCCCT GGCACATATC GCACCGCATC GTATTTGCTA 657

ATTCATGACG GTAGGCGCGT TGTGGTGACG TATGAGGGTG ATACTAGTGC TGGTTACAAC 717

CACGATGTCT CCAACTTGCG CTCCTGGATT AGAACCACCA AGGTTACCGG AGACCATCCC 777

CTCGTTATCG AGCGGGTTAG GGCCATTGGC TGCCACTTTG TTCTCTTGCT CACGGCAGCC 837

CCGGAGCCAT CACCTATGCC TTATGTTCCT TACCCCCGGT CTACCGAGGT CTATGTCCGA 897

TCGATCTTCG GCCCGGGTGG CACCCCTTCC TTATTCCCAA CCTCATGCTC CACTAAGTCG 957

ACCTTCCATG CTGTCCCTGC CCATATTTGG GACCGTCTTA TGCTGTTCGG GGCCACCTTG 1017

GATGACCAAG CCTTTTGCTG CTCCCGTTTA ATGACCTACC TTCGCGGCAT TAGCTACAAG 1077

GTCACTGTTG GTACCCTTGT GGCTAATGAA GGCTGGAATG CCTCTGAGGA CGCCCTCACA 1137

GCTGTTATCA CTGCCGCCTA CCTTACCATT TGCCACCAGC GGTATCTCCG CACCCAGGCT 1197

ATATCCAAGG GGATGCGTCG TCTGGAACGG GAGCATGCCC AGAAGTTTAT AACACGCCTC 1257

TACAGCTGGC TCTTCGAGAA GTCCGGCCGT GATTACATCC CTGGCCGTCA GTTGGAGTTC 1317

TACGCCCAGT GCAGGCGCTG GCTCTCCGCC GGCTTTCATC TTGATCCACG GGTGTTGGTT 1377

TTTGACGAGT CGGCCCCCTG CCATTGTAGG ACCGCGATCC GTAAGGCGCT CTCAAAGTTT 1437

TGCTGCTTCA TGAAGTGGCT TGGTCAGGAG TGCACCTGCT TCCTTCAGCC TGCAGAAGGC 1497

GCCGTCGGCG ACCAGGGTCA TGATAATGAA GCCTATGAGG GGTCCGATGT TGACCCTGCT 1557

GAGTCCGCCA TTAGTGACAT ATCTGGGTCC TATGTCGTCC CTGGCACTGC CCTCCAACCG 1617

CTCTACCAGG CCCTCGATCT CCCCGCTGAG ATTGTGGCTC GCGCGGGCCG GCTGACCGCC 1677

ACAGTAAAGG TCTCCCAGGT CGATGGGCGG ATCGATTGCG AGACCCTTCT TGGTAACAAA 1737

ACCTTTCGCA CGTCGTTCGT TGACGGGGCG GTCTTAGAGA CCAATGGCCC AGAGCGCCAC 1797

AATCTCTCCT TCGATGCCAG TCAGAGCACT ATGGCCGCTG GCCCTTTCAG TCTCACCTAT 1857

GCCGCCTCTG CAGCTGGGCT GGAGGTGCGC TATGTTGCTG CCGGGCTTGA CCATCGGGCG 1917

GTTTTTGCCC CCGGTGTTTC ACCCCGGTCA GCCCCCGGCG AGGTTACCGC CTTCTGCTCT 1977

GCCCTATACA GGTTTAACCG TGAGGCCCAG CGCCATTCGC TGATCGGTAA CTTATGGTTC 2037

CATCCTGAGG GACTCATTGG CCTCTTCGCC CCGTTTTCGC CCGGGCATGT TTGGGAGTCG 2097

GCTAATCCAT TCTGTGGCGA GAGCACACTT TACACCCGTA CTTGGTCGGA GGTTGATGCC 2157

GTCTCTAGTC CAGCCCGGCC TGACTTAGGT TTTATGTCTG AGCCTTCTAT ACCTAGTAGG 2217

GCCGCCACGC CTACCCTGGC GGCCCCTCTA CCCCCCCCTG CACCGGACCC TTCCCCCCCT 2277

CCCTCTGCCC CGGCGCTTGC TGAGCCGGCT TCTGGCGCTA CCGCCGGGGC CCCGGCCATA 2337

ACTCACCAGA CGGCCCGGCA CCGCCGCCTG CTCTTCACCT ACCCGGATGG CTCTAAGGTA 2397

TTCGCCGGCT CGCTGTTCGA GTCGACATGC ACGTGGCTCG TTAACGCGTC TAATGTTGAC 2457

CACCGCCCTG GCGGCGGGCT TTGCCATGCA TTTTACCAAA GGTACCCCGC CTCCTTTGAT 2517

GCTGCCTCTT TTGTGATGCG CGACGGCGCG GCCGCGTACA CACTAACCCC CCGGCCAATA 2577

ATTCACGCTG TCGCCCCTGA TTATAGGTTG GAACATAACC CAAAGAGGCT TGAGGCTGCT 2637

TATCGGGAAA CTTGCTCCCG CCTCGGCACC GCTGCATACC CGCTCCTCGG GACCGGCATA 2697

TACCAGGTGC CGATCGGCCC CAGTTTTGAC GCCTGGGAGC GGAACCACCG CCCCGGGGAT 2757

GAGTTGTACC TTCCTGAGCT TGCTGCCAGA TGGTTTGAGG CCAATAGGCC GACCCGCCCG 2817

ACTCTCACTA TAACTGAGGA TGTTGCACGG ACAGCGAATC TGGCCATCGA GCTTGACTCA 2877

GCCACAGATG TCGGCCGGGC CTGTGCCGGC TGTCGGGTCA CCCCCGGCGT TGTTCAGTAC 2937

CAGTTTACTG CAGGTGTGCC TGGATCCGGC AAGTCCCGCT CTATCACCCA AGCCGATGTG 2997

GACGTTGTCG TGGTCCCGAC GCGTGAGTTG CGTAATGCCT GGCGCCGTCG CGGCTTTGCT 3057

GCTTTTACCC CGCATACTGC CGCCAGAGTC ACCCAGGGGC GCCGGGTTGT CATTGATGAG 3117

GCTCCATCCC TCCCCCCTCA CCTGCTGCTG CTCCACATGC AGCGGGCCGC CACCGTCCAC 3177

CTTCTTGGCG ACCCGAACCA GATCCCAGCC ATCGACTTTG AGCACGCTGG GCTCGTCCCC 3237

GCCATCAGGC CCGACTTAGG CCCCACCTCC TGGTGGCATG TTACCCATCG CTGGCCTGCG 3297

GATGTATGCG AGCTCATCCG TGGTGCATAC CCCATGATCC AGACCACTAG CCGGGTTCTC 3357

CGTTCGTTGT TCTGGGGTGA GCCTGCCGTC GGGCAGAAAC TAGTGTTCAC CCAGGCGGCC 3417

AAGCCCGCCA ACCCCGGCTC AGTGACGGTC CACGAGGCGC AGGGCGCTAC CTACACGGAG 3477

ACCACTATTA TTGCCACAGC AGATGCCCGG GGCCTTATTC AGTCGTCTCG GGCTCATGCC 3537

ATTGTTGCTC TGACGCGCCA CACTGAGAAG TGCGTCATCA TTGACGCACC AGGCCTGCTT 3597

CGCGAGGTGG GCATCTCCGA TGCAATCGTT AATAACTTTT TCCTCGCTGG TGGCGAAATT 3657

GGTCACCAGC GCCCATCAGT TATTCCCCGT GGCAACCCTG ACGCCAATGT TGACACCCTG 3717

GCTGCCTTCC CGCCGTCTTG CCAGATTAGT GCCTTCCATC AGTTGGCTGA GGAGCTTGGC 3777

CACAGACCTG TCCCTGTTGC AGCTGTTCTA CCACCCTGCC CCGAGCTCGA ACAGGGCCTT 3837

CTCTACCTGC CCCAGGAGCT CACCACCTGT GATAGTGTCG TAACATTTGA ATTAACAGAC 3897

ATTGTGCACT GCCGCATGGC CGCCCCGAGC CAGCGCAAGG CCGTGCTGTC CACACTCGTG 3957

GGCCGCTACG GCGGTCGCAC AAAGCTCTAC AATGCTTCCC ACTCTGATGT TCGCGACTCT 4017

CTCGCCCGTT TTATCCCGGC CATTGGCCCC GTACAGGTTA CAACTTGTGA ATTGTACGAG 4077

CTAGTGGAGG CCATGGTCGA GAAGGGCCAG GATGGCTCCG CCGTCCTTGA GCTTGATCTT 4137

TGCAACCGTG ACGTGTCCAG GATCACCTTC TTCCAGAAAG ATTGTAACAA GTTCACCACA 4197

GGTGAGACCA TTGCCCATGG TAAAGTGGGC CAGGGCATCT CGGCCTGGAG CAAGACCTTC 4257

TGCGCCCTCT TTGGCCCTTG GTTCCGCGCT ATTGAGAAGG CTATTCTGGC CCTGCTCCCT 4317

CAGGGTGTGT TTTACGGTGA TGCCTTTGAT GACACCGTCT TCTCGGCGGC TGTGGCCGCA 4377

GCAAAGGCAT CCATGGTGTT TGAGAATGAC TTTTCTGAGT TTGACTCCAC CCAGAATAAC 4437

TTTTCTCTGG GTCTAGAGTG TGCTATTATG GAGGAGTGTG GGATGCCGCA GTGGCTCATC 4497

CGCCTGTATC ACCTTATAAG GTCTGCGTGG ATCTTGCAGG CCCCGAAGGA GTCTCTGCGA 4557

GGGTTTTGGA AGAAACACTC CGGTGAGCCC GGCACTCTTC TATGGAATAC TGTCTGGAAT 4617

ATGGCCGTTA TTACCCACTG TTATGACTTC CGCGATTTTC AGGTGGCTGC CTTTAAAGGT 4677

GATGATTCGA TAGTGCTTTG CAGTGAGTAT CGTCAGAGTC CAGGAGCTGC TGTCCTGATC 4737

GCCGGCTGTG GCTTGAAGTT GAAGGTAGAT TTCCGCCCGA TCGGTTTGTA TGCAGGTGTT 4797

GTGGTGGCCC CCGGCCTTGG CGCGCTCCCT GATGTTGTGC GCTTCGCCGG CCGGCTTACC 4857

GAGAAGAATT GGGGCCCTGG CCCTGAGCGG GCGGAGCAGC TCCGCCTCGC TGTTAGTGAT 4917

TTCCTCCGCA AGCTCACGAA TGTAGCTCAG ATGTGTGTGG ATGTTGTTTC CCGTGTTTAT 4977

GGGGTTTCCC CTGGACTCGT TCATAACCTG ATTGGCATGC TACAGGCTGT TGCTGATGGC 5037

AAGGCACATT TCACTGAGTC AGTAAAACCA GTGCTCGACT TGACAAATTC AATCTTGTGT 5097

CGGGTGGAAT GA ATAACATGTC TTTTGCTGCG CCCATGGGTT CGCGACCATG 5149

CGCCCTCGGC CTATTTTGTT GCTGCTCCTC ATGTTTTTGC CTATGCTGCC CGCGCCACCG 5209

CCCGGTCAGC CGTCTGGCCG CCGTCGTGGG CGGCGCAGCG GCGGTTCCGG CGGTGGTTTC 5269

TGGGGTGACC GGGTTGATTC TCAGCCCTTC GCAATCCCCT ATATTCATCC AACCAACCCC 5329

TTCGCCCCCG ATGTCACCGC TGCGGCCGGG GCTGGACCTC GTGTTCGCCA ACCCGCCCGA 5389

CCACTCGGCT CCGCTTGGCG TGACCAGGCC CAGCGCCCCG CCGTTGCCTC ACGTCGTAGA 5449

CCTACCACAG CTGGGGCCGC GCCGCTAA CCGCGGTCGC TCCGGCCCAT GACACCCCGC 5507

CAGTGCCTGA TGTCGACTCC CGCGGCGCCA TCTTGCGCCG GCAGTATAAC CTATCAACAT 5567

CTCCCCTTAC CTCTTCCGTG GCCACCGGCA CTAACCTGGT TCTTTATGCC GCCCCTCTTA 5627

GTCCGCTTTT ACCCCTTCAG GACGGCACCA ATACCCATAT AATGGCCACG GAAGCTTCTA 5687

ATTATGCCCA GTACCGGGTT GCCCGTGCCA CAATCCGTTA CCGCCCGCTG GTCCCCAATG 5747

CTGTCGGCGG TTACGCCATC TCCATCTCAT TCTGGCCACA GACCACCACC ACCCCGACGT 5807

CCGTTGATAT GAATTCAATA ACCTCGACGG ATGTTCGTAT TTTAGTCCAG CCCGGCATAG 5867

CCTCTGAGCT TGTGATCCCA AGTGAGCGCC TACACTATCG TAACCAAGGC TGGCGCTCCG 5927

TCGAGACCTC TGGGGTGGCT GAGGAGGAGG CTACCTCTGG TCTTGTTATG CTTTGCATAC 5987

ATGGCTCACT CGTAAATTCC TATACTAATA CACCCTATAC CGGTGCCCTC GGGCTGTTGG 6047

ACTTTGCCCT TGAGCTTGAG TTTCGCAACC TTACCCCCGG TAACACCAAT ACGCGGGTCT 6107

CCCGTTATTC CAGCACTGCT CGCCACCGCC TTCGTCGCGG TGCGGACGGG ACTGCCGAGC 6167

TCACCACCAC GGCTGCTACC CGCTTTATGA AGGACCTCTA TTTTACTAGT ACTAATGGTG 6227

TCGGTGAGAT CGGCCGCGGG ATAGCCCTCA CCCTGTTCAA CCTTGCTGAC ACTCTGCTTG 6287

GCGGCCTGCC GACAGAATTG ATTTCGTCGG CTGGTGGCCA GCTGTTCTAC TCCCGTCCCG 6347

TTGTCTCAGC CAATGGCGAG CCGACTGTTA AGTTGTATAC ATCTGTAGAG AATGCTCAGC 6407

AGGATAAGGG TATTGCAATC CCGCATGACA TTGACCTCGG AGAATCTCGT GTGGTTATTC 6467

AGGATTATGA TAACCAACAT GAACAAGATC GGCCGACGCC TTCTCCAGCC CCATCGCGCC 6527

CTTTCTCTGT CCTTCGAGCT AATGATGTGC TTTGGCTCTC TCTCACCGCT GCCGAGTATG 6587

ACCAGTCCAC TTATGGCTCT TCGACTGGCC CAGTTTATGT TTCTGACTCT GTGACCTTGG 6647

TTAATGTTGC GACCGGCGCG CAGGCCGTTG CCCGGTCGCT CGATTGGACC AAGGTCACAC 6707

TTGACGGTCG CCCCCTCTCC ACCATCCAGC AGTACTCGAA GACCTTCTTT GTCCTGCCGC 6767

TCCGCGGTAA GCTCTCTTTC TGGGAGGCAG GCACAACTAA AGCCGGGTAC CCTTATAATT 6827

ATAACACCAC TGCTAGCGAC CAACTGCTTG TCGAGAATGC CGCCGGGCAC CGGGTCGCTA 6887

TTTCCACTTA CACCACTAGC CTGGGTGCTG GTCCCGTCTC CATTTCTGCG GTTGCCGTTT 6947

TAGCCCCCCA CTCTGCGCTA GCATTGCTTG AGGATACCTT GGACTACCCT GCCCGCGCCC 7007

ATACTTTTGA TGATTTCTGC CCAGAGTGCC GCCCCCTTGG CCTTCAGGGC TGCGCTTTCC 7067

AGTCTACTGT CGCTGAGCTT CAGCGCCTTA AGATGAAGGT GGGTAAAACT CGGGAGTTGT 7127

AG TTTATTTGCT TGTGCCCCCC TTCTTTCTGT TGCTTATTTC TCATTTCTGC 7179

GTTCCGCGCT CCCTGA 7195

a fourth sequence (SEQ ID NO.10):

GCCATGGAGG CCCACCAGTT CATTAAGGCT CCTGGCATCA CTACTGCTAT TGAGCAAGCA 60

GCTCTAGCAG CGGCCAACTC CGCCCTTGCG AATGCTGTGG TGGTCCGGCC TTTCCTTTCC 120

CATCAGCAGG TTGAGATCCT TATAAATCTC ATGCAACCTC GGCAGCTGGT GTTTCGTCCT 180

GAGGTTTTTT GGAATCACCC GATTCAACGT GTTATACATA ATGAGCTTGA GCAGTATTGC 240

CGTGCTCGCT CGGGTCGCTG CCTTGAGATT GGAGCCCACC CACGCTCCAT TAATGATAAT 300

CCTAATGTCC TCCATCGCTG CTTTCTCCAC CCCGTCGGCC GGGATGTTCA GCGCTGGTAC 360

ACAGCCCCGA CTAGGGGACC TGCGGCGAAC TGTCGCCGCT CGGCACTTCG TGGTCTGCCA 420

CCAGCCGACC GCACTTACTG TTTTGATGGC TTTGCCGGCT GCCGTTTTGC CGCCGAGACT 480

GGTGTGGCTC TCTATTCTCT CCATGACTTG CAGCCGGCTG ATGTTGCCGA GGCGATGGCT 540

CGCCACGGCA TGACCCGCCT TTATGCAGCT TTCCACTTGC CTCCAGAGGT GCTCCTGCCT 600

CCTGGCACCT ACCGGACATC ATCCTACTTG CTGATCCACG ATGGTAAGCG CGCGGTTGTC 660

ACTTATGAGG GTGACACTAG CGCCGGTTAC AATCATGATG TTGCCACCCT CCGCACATGG 720

ATCAGGACAA CTAAGGTTGT GGGTGAACAC CCTTTGGTGA TCGAGCGGGT GCGGGGTATT 780

GGCTGTCACT TTGTGTTGTT GATCACTGCG GCCCCTGAGC CCTCCCCGAT GCCCTACGTT 840

CCTTACCCGC GTTCGACGGA GGTCTATGTC CGGTCTATCT TTGGGCCCGG CGGGTCCCCG 900

TCGCTGTTCC CGACCGCTTG TGCTGTCAAG TCCACTTTTC ACGCCGTCCC CACGCACATC 960

TGGGACCGTC TCATGCTCTT TGGGGCCACC CTCGACGACC AGGCCTTTTG CTGCTCCAGG 1020

CTTATGACGT ACCTTCGTGG CATTAGCTAT AAGGTAACTG TGGGTGCCCT GGTCGCTAAT 1080

GAAGGCTGGA ATGCCACCGA GGATGCGCTC ACTGCAGTTA TTACGGCGGC TTACCTCACA 1140

ATATGTCATC AGCGTTATTT GCGGACCCAG GCGATTTCTA AGGGCATGCG CCGGCTTGAG 1200

CTTGAACATG CTCAGAAATT TATTTCACGC CTCTACAGCT GGCTATTTGA GAAGTCAGGT 1260

CGTGATTACA TCCCAGGCCG CCAGCTGCAG TTCTACGCTC AGTGCCGCCG CTGGTTATCT 1320

GCCGGGTTCC ATCTCGACCC CCGCACCTTA GTTTTTGATG AGTCAGTGCC TTGTAGCTGC 1380

CGAACCACCA TCCGGCGGAT CGCTGGAAAA TTTTGCTGTT TTATGAAGTG GCTCGGTCAG 1440

GAGTGTTCTT GTTTCCTCCA GCCCGCCGAG GGGCTGGCGG GCGACCAAGG TCATGACAAT 1500

GAGGCCTATG AAGGCTCTGA TGTTGATACT GCTGAGCCTG CCACCCTAGA CATTACAGGC 1560

TCATACATCG TGGATGGTCG GTCTCTGCAA ACTGTCTATC AAGCTCTCGA CCTGCCAGCT 1620

GACCTGGTAG CTCGCGCAGC CCGACTGTCT GCTACAGTTA CTGTTACTGA AACCTCTGGC 1680

CGTCTGGATT GCCAAACAAT GATCGGCAAT AAGACTTTTC TCACTACCTT TGTTGATGGG 1740

GCACGCCTTG AGGTTAACGG GCCTGAGCAG CTTAACCTCT CTTTTGACAG CCAGCAGTGT 1800

AGTATGGCAG CCGGCCCGTT TTGCCTCACC TATGCTGCCG TAGATGGCGG GCTGGAAGTT 1860

CATTTTTCCA CCGCTGGCCT CGAGAGCCGT GTTGTTTTCC CCCCTGGTAA TGCCCCGACT 1920

GCCCCGCCGA GTGAGGTCAC CGCCTTCTGC TCAGCTCTTT ATAGGCACAA CCGGCAGAGC 1980

CAGCGCCAGT CGGTTATTGG TAGTTTGTGG CTGCACCCTG AAGGTTTGCT CGGCCTGTTC 2040

CCGCCCTTTT CACCCGGGCA TGAGTGGCGG TCTGCTAACC CATTTTGCGG CGAGAGCACG 2100

CTCTACACCC GCACTTGGTC CACAATTACA GACACACCCT TAACTGTCGG GCTAATTTCC 2160

GGTCATTTGG ATGCTGCTCC CCACTCGGGG GGGCCACCTG CTACTGCCAC AGGCCCTGCT 2220

GTAGGCTCGT CTGACTCTCC AGACCCTGAC CCGCTACCTG ATGTTACAGA TGGCTCACGC 2280

CCCTCTGGGG CCCGTCCGGC TGGCCCCAAC CCGAATGGCG TTCCGCAGCG CCGCTTACTA 2340

CACACCTACC CTGACGGCGC TAAGATCTAT GTCGGCTCCA TTTTCGAGTC TGAGTGCACC 2400

TGGCTTGTCA ACGCATCTAA CGCCGGCCAC CGCCCTGGTG GCGGGCTTTG TCATGCTTTT 2460

TTTCAGCGTT ACCCTGATTC GTTTGACGCC ACCAAGTTTG TGATGCGTGA TGGTCTTGCC 2520

GCGTATACCC TTACACCCCG GCCGATCATT CATGCGGTGG CCCCGGACTA TCGATTGGAA 2580

CATAACCCCA AGAGGCTCGA GGCTGCCTAC CGCGAGACTT GCGCCCGCCG AGGCACTGCT 2640

GCCTATCCAC TCTTAGGCGC TGGCATTTAC CAGGTGCCTG TTAGTTTGAG TTTTGATGCC 2700

TGGGAGCGGA ACCACCGCCC GTTTGACGAG CTTTACCTAA CAGAGCTGGC GGCTCGGTGG 2760

TTTGAATCCA ACCGCCCCGG TCAGCCCACG TTGAACATAA CTGAGGATAC CGCCCGTGCG 2820

GCCAACCTGG CCCTGGAGCT TGACTCCGGG AGTGAAGTAG GCCGCGCATG TGCCGGGTGT 2880

AAAGTCGAGC CTGGCGTTGT GCGGTATCAG TTTACAGCCG GTGTCCCCGG CTCTGGCAAG 2940

TCAAAGTCCG TGCAACAGGC GGATGTGGAT GTTGTTGTTG TGCCCACTCG CGAGCTTCGG 3000

AACGCTTGGC GGCGCCGGGG CTTTGCGGCA TTCACTCCGC ACACTGCGGC CCGTGTCACT 3060

AGCGGCCGTA GGGTTGTCAT TGATGAGGCC CCTTCGCTCC CCCCACACTT GCTGCTTTTA 3120

CATATGCAGC GTGCTGCATC TGTGCACCTC CTTGGGGACC CGAATCAGAT CCCCGCCATA 3180

GATTTTGAGC ACACCGGTCT GATTCCAGCA ATACGGCCGG AGTTGGTCCC GACTTCATGG 3240

TGGCATGTCA CCCACCGTTG CCCTGCAGAT GTCTGTGAGT TAGTCCGTGG TGCTTACCCT 3300

AAAATCCAGA CTACAAGTAA GGTGCTCCGT TCCCTTTTCT GGGGAGAGCC AGCTGTCGGC 3360

CAGAAGCTAG TGTTCACACA GGCTGCTAAG GCCGCGCACC CCGGATCTAT AACGGTCCAT 3420

GAGGCCCAGG GTGCCACTTT TACCACTACA ACTATAATTG CAACTGCAGA TGCCCGTGGC 3480

CTCATACAGT CCTCCCGGGC TCACGCTATA GTTGCTCTCA CTAGGCATAC TGAAAAATGT 3540

GTTATACTTG ACTCTCCCGG CCTGTTGCGT GAGGTGGGTA TCTCAGATGC CATTGTTAAT 3600

AATTTCTTCC TTTCGGGTGG CGAGGTTGGT CACCAGAGAC CATCGGTCAT TCCGCGAGGC 3660

AACCCTGACC GCAATGTTGA CGTGCTTGCG GCGTTTCCAC CTTCATGCCA AATAAGCGCC 3720

TTCCATCAGC TTGCTGAGGA GCTGGGCCAC CGGCCGGCGC CGGTGGCGGC TGTGCTACCT 3780

CCCTGCCCTG AGCTTGAGCA GGGCCTTCTC TATCTGCCAC AGGAGCTAGC CTCCTGTGAC 3840

AGTGTTGTGA CATTTGAGCT AACTGACATT GTGCACTGCC GCATGGCGGC CCCTAGCCAA 3900

AGGAAAGCTG TTTTGTCCAC GCTGGTAGGC CGGTATGGCA GACGCACAAG GCTTTATGAT 3960

GCGGGTCACA CCGATGTCCG CGCCTCCCTT GCGCGCTTTA TTCCCACTCT CGGGCGGGTT 4020

ACTGCCACCA CCTGTGAACT CTTTGAGCTT GTAGAGGCGA TGGTGGAGAA GGGCCAAGAC 4080

GGTTCAGCCG TCCTCGAGTT GGATTTGTGC AGCCGAGATG TCTCCCGCAT AACCTTTTTC 4140

CAGAAGGATT GTAACAAGTT CACGACCGGC GAGACAATTG CGCATGGCAA AGTCGGTCAG 4200

GGTATCTTCC GCTGGAGTAA GACGTTTTGT GCCCTGTTTG GCCCCTGGTT CCGTGCGATT 4260

GAGAAGGCTA TTCTATCCCT TTTACCACAA GCTGTGTTCT ACGGGGATGC TTATGACGAC 4320

TCAGTATTCT CTGCTGCCGT GGCTGGCGCC AGCCATGCCA TGGTGTTTGA AAATGATTTT 4380

TCTGAGTTTG ACTCGACTCA GAATAACTTT TCCCTAGGTC TTGAGTGCGC CATTATGGAA 4440

GAGTGTGGTA TGCCCCAGTG GCTTGTCAGG TTGTACCATG CCGTCCGGTC GGCGTGGATC 4500

CTGCAGGCCC CAAAAGAGTC TTTGAGAGGG TTCTGGAAGA AGCATTCTGG TGAGCCGGGC 4560

AGCTTGCTCT GGAATACGGT GTGGAACATG GCAATCATTG CCCATTGCTA TGAGTTCCGG 4620

GACCTCCAGG TTGCCGCCTT CAAGGGCGAC GACTCGGTCG TCCTCTGTAG TGAATACCGC 4680

CAGAGCCCAG GCGCCGGTTC GCTTATAGCA GGCTGTGGTT TGAAGTTGAA GGCTGACTTC 4740

CGGCCGATTG GGCTGTATGC CGGGGTTGTC GTCGCCCCGG GGCTCGGGGC CCTACCCGAT 4800

GTCGTTCGAT TCGCCGGACG GCTTTCGGAG AAGAACTGGG GGCCTGATCC GGAGCGGGCA 4860

GAGCAGCTCC GCCTCGCCGT GCAGGATTTC CTCCGTAGGT TAACGAATGT GGCCCAGATT 4920

TGTGTTGAGG TGGTGTCTAG AGTTTACGGG GTTTCCCCGG GTCTGGTTCA TAACCTGATA 4980

GGCATGCTCC AGACTATTGG TGATGGTAAG GCGCATTTTA CAGAGTCTGT TAAGCCTATA 5040

CTTGACCTTA CACACTCAAT TATGCACCGG TCTGAATGAA TAACATGTGG TTTGCTGCGC 5100

CCATGGGTTC GCCACCATGC GCCCTAGGCC TCTTTTGCTG TTGTTCCTCT TGTTTCTGCC 5160

TATGTTGCCC GCGCCACCGA CCGGTCAGCC GTCTGGCCGC CGTCGTGGGC GGCGCAGCGG 5220

CGGTACCGGC GGTGGTTTCT GGGGTGACCG GGTTGATTCT CAGCCCTTCG CAATCCCCTA 5280

TATTCATCCA ACCAACCCCT TTGCCCCAGA CGTTGCCGCT GCGTCCGGGT CTGGACCTCG 5340

CCTTCGCCAA CCAGCCCGGC CACTTGGCTC CACTTGGCGA GATCAGGCCC AGCGCCCCTC 5400

CGCTGCCTCC CGTCGCCGAC CTGCCACAGC CGGGGCTGCG GCGCTGACGG CTGTGGCGCC 5460

TGCCCATGAC ACCTCACCCG TCCCGGACGT TGATTCTCGC GGTGCAATTC TACGCCGCCA 5520

GTATAATTTG TCTACTTCAC CCCTGACATC CTCTGTGGCC TCTGGCACTA ATTTAGTCCT 5580

GTATGCAGCC CCCCTTAATC CGCCTCTGCC GCTGCAGGAC GGTACTAATA CTCACATTAT 5640

GGCCACAGAG GCCTCCAATT ATGCACAGTA CCGGGTTGCC CGCGCTACTA TCCGTTACCG 5700

GCCCCTAGTG CCTAATGCAG TTGGAGGCTA TGCTATATCC ATTTCTTTCT GGCCTCAAAC 5760

AACCACAACC CCTACATCTG TTGACATGAA TTCCATTACT TCCACTGATG TCAGGATTCT 5820

TGTTCAACCT GGCATAGCAT CTGAATTGGT CATCCCAAGC GAGCGCCTTC ACTACCGCAA 5880

TCAAGGTTGG CGCTCGGTTG AGACATCTGG TGTTGCTGAG GAGGAAGCCA CCTCCGGTCT 5940

TGTCATGTTA TGCATACATG GCTCTCCAGT TAACTCCTAT ACCAATACCC CTTATACCGG 6000

TGCCCTTGGC TTACTGGACT TTGCCTTAGA GCTTGAGTTT CGCAATCTCA CCACCTGTAA 6060

CACCAATACA CGTGTGTCCC GTTACTCCAG CACTGCTCGT CACTCCGCCC GAGGGGCCGA 6120

CGGGACTGCG GAGCTGACCA CAACTGCAGC CACCAGGTTC ATGAAAGATC TCCACTTTAC 6180

CGGCCTTAAT GGGGTAGGTG AAGTCGGCCG CGGGATAGCT CTAACATTAC TTAACCTTGC 6240

TGACACGCTC CTCGGCGGGC TCCCGACAGA ATTAATTTCG TCGGCTGGCG GGCAACTGTT 6300

TTATTCCCGC CCGGTTGTCT CAGCCAATGG CGAGCCAACC GTGAAGCTCT ATACATCAGT 6360

GGAGAATGCT CAGCAGGATA AGGGTGTTGC TATCCCCCAC GATATCGATC TTGGTGATTC 6420

GCGTGTGGTC ATTCAGGATT ATGACAACCA GCATGAGCAG GATCGGCCCA CCCCGTCGCC 6480

TGCGCCATCT CGGCCTTTTT CTGTTCTCCG AGCAAATGAT GTACTTTGGC TGTCCCTCAC 6540

TGCAGCCGAG TATGACCAGT CCACTTACGG GTCGTCAACT GGCCCGGTTT ATATCTCGGA 6600

CAGCGTGACT TTGGTGAATG TTGCGACTGG CGCGCAGGCC GTAGCCCGAT CGCTTGACTG 6660

GTCCAAAGTC ACCCTCGACG GGCGGCCCCT CCCGACTGTT GAGCAATATT CCAAGACATT 6720

CTTTGTGCTC CCCCTTCGTG GCAAGCTCTC CTTTTGGGAG GCCGGCACAA CAAAAGCAGG 6780

TTATCCTTAT AATTATAATA CTACTGCTAG TGACCAGATT CTGATTGAAA ATGCTGCCGG 6840

CCATCGGGTC GCCATTTCAA CCTATACCAC CAGGCTTGGG GCCGGTCCGG TCGCCATTTC 6900

TGCGGCCGCG GTTTTGGCTC CACGCTCCGC CCTGGCTCTG CTGGAGGATA CTTTTGATTA 6960

TCCGGGGCGG GCGCACACAT TTGATGACTT CTGCCCTGAA TGCCGCGCTT TAGGCCTCCA 7020

GGGTTGTGCT TTCCAGTCAA CTGTCGCTGA GCTCCAGCGC CTTAAAGTTA AGGTGGGTAA 7080

AACTCGGGAG TTGTAGTTTA TTTGGCTGTG CCCACCTACT TATATCTGCT GATTTCCTTT 7140

ATTTCCTTTT TCTCGGTCCC GCGCTCCCTG A 7171

or a fifth sequence (SEQ ID NO.12):

CGGGCCCCGT ACAGGTCACA ACCTGTGAGT TGTACGAGCT AGTGGAGGCC ATGGTCGAGA 60

AAGGCCAGGA TGGCTCCGCC GTCCTTGAGC TCGATCTCTG CAACCGTGAC GTGTCCAGGA 120

TCACCTTTTT CCAGAAAGAT TGCAATAAGT TCACCACGGG AGAGACCATC GCCCATGGTA 180

AAGTGGGCCA GGGCATTTCG GCCTGGAGTA AGACCTTCTG TGCCCTTTTC GGCCCCTGGT 240

TCCGTGCTAT TGAGAAGGCT ATTCTGGCCC TGCTCCCTCA GGGTGTGTTT TATGGGGATG 300

CCTTTGATGA CACCGTCTTC TCGGCGCGTG TGGCCGCAGC AAAGGCGTCC ATGGTGTTTG 360

AGAATGACTT TTCTGAGTTT GACTCCACCC AGAATAATTT TTCCCTGGGC CTAGAGTGTG 420

CTATTATGGA GAAGTGTGGG ATGCCGAAGT GGCTCATCCG CTTGTACCAC CTTATAAGGT 480

CTGCGTGGAT CCTGCAGGCC CCGAAGGAGT CCCTGCGAGG GTGTTGGAAG AAACACTCCG 540

GTGAGCCCGG CACTCTTCTA TGGAATACTG TCTGGAACAT GGCCGTTATC ACCCATTGTT 600

ACGATTTCCG CGATTTGCAG GTGGCTGCCT TTAAAGGTGA TGATTCGATA GTGCTTTGCA 660

GTGAGTACCG TCAGAGTCCA GGGGCTGCTG TCCTGATTGC TGGCTGTGGC TTAAAGCTGA 720

AGGTGGGTTT CCGTCCGATT GGTTTGTATG CAGGTGTTGT GGTGACCCCC GGCCTTGGCG 780

CGCTTCCCGA CGTCGTGCGC TTGTCCGGCC GGCTTACTGA GAAGAATTGG GGCCCTGGCC 840

CTGAGCGGGC GGAGCAGCTC CGCCTTGCTG TGCG 874

or a sequence complementary thereto.

4. A protein which is (a) immunoreactive with antibodies present in individuals infected with enterically transmitted nonA/nonB hepatitis and (b) derived from a viral hepatitis agent whose genome contains a region which is homologous to the 1.33 kb DNA EcoRI insert present in plasmid pTZXF1(ET1.1) carried in E. coli strain BB4, and having ATCC Deposit Nno. 67717.

5. The protein of claim 4, which is encoded by a coding region within said 1.33 kb EcoRI insert.

6. A protein which is (a) immunoreactive with antibodies present in individuals infected with enterically transmitted nonA/nonB hepatitis and (b) encoded by genetic sequence 406.3-2 or 406.4-2 or a fragment thereof.

7. A method of detecting infection by enterically transmitted nonA/nonB hepatitis viral agent in a test individual, comprising:

providing a peptide antigen which is (a) immunoreactive with antibodies present in individuals infected with enterically transmitted nonA/nonB hepatitis and (b) derived from a viral hepatitis agent whose genome contains a region which is homologous to

the 1.33 kb DNA EcoRI insert present in plasmid pTZKF1(ET1.1) carried in E. coli strain BB4, and having ATCC deposit no. 67717,

reacting serum from the test individual with such antigen, and

examining the antigen for the presence of bound antibody.

8. The method of claim 7, wherein the serum antibody is an IgM or IgG antibody, or a mixture of both, the antigen provided is attached to a support, said reacting includes contacting such serum with the support and said examining includes reacting the support and bound serum antibody with a reporter-labeled anti-human antibody.

9. A kit for ascertaining the presence of serum antibodies which are diagnostic of enterically transmitted nonA/nonB hepatitis infection, comprising

a support with surface-bound recombinant peptide antigen which is (a) immunoreactive with antibodies present in individuals infected with enterically transmitted nonA/nonB viral hepatitis agent and (b) derived from a viral hepatitis agent whose genome contains a region which is homologous to the 1.33 kb DNA EcoRI insert present in plasmid pTZKF1(ET1.1) carried in E. coli strain BB4, and having ATCC deposit no. 67717, and

a reporter-labeled anti-human antibody.

10. A DNA fragment derived from an enterically transmitted nonA/nonB viral hepatitis agent whose genome contains a region which is homologous to the 1.33 kb DNA EcoRI insert present in plasmid pTZKF1(ET1.1) carried in E. coli strain BB4 and having ATCC deposit no. 67717.

11. The fragment of claim 10, which is derived from said 1.33 kb EcoRI insert.

12. A DNA molecule comprising genetic sequence 406.3-2 or 406.4-2 or a fragment thereof, wherein said fragment comprises at least 12 consecutive nucleotides.

13. A DNA fragment derived from an enterically transmitted nonA/nonB viral hepatitis agent whose genome contains a region which is homologous to a DNA fragment within a first sequence (SEQ ID NO.1):

AGACCTGTCC CTGTTGCAGC TGTTCTACCA CCCTGCCCCG AGCTCGAACA GGGCCTTCTC 60

TACCTGCCCC AGGAGCTCAC CACCTGTGAT AGTGTCGTAA CATTTGAATT AACAGACATT 120

GTGCACTGCC GCATGGCCGC CCCGAGCCAG CGCAAGGCCG TGCTGTCCAC ACTCGTGGGC 180

CGCTACGGCG GTCGCACAAA GCTCTACAAT GCTTCCCACT CTGATGTTCG CGACTCTCTC 240

GCCCGTTTTA TCCCGGCCAT TGGCCCCGTA CAGGTTACAA CTTGTGAATT GTACGAGCTA 300

GTGGAGGCCA TGGTCGAGAA GGGCCAGGAT GGCTCCGCCG TCCTTGAGCT TGATCTTTGC 360

AACCGTGACG TGTCCAGGAT CACCTTCTTC CAGAAAGATT GTAACAAGTT CACCACAGGT 420

GAGACCATTG CCCATGGTAA AGTGGGCCAG GGCATCTCGG CCTGGAGCAA GACCTTCTGC 480

GCCCTCTTTG GCCCTTGGTT CCGCGCTATT GAGAAGGCTA TTCTGGCCCT GCTCCCTCAG 540

GGTGTGTTTT ACGGTGATGC CTTTGATGAC ACCGTCTTCT CGGCGGCTGT GGCCGCAGCA 600

AAGGCATCCA TGGTGTTTGA GAATGACTTT TCTGAGTTTG ACTCCACCCA GAATAACTTT 660

TCTCTGGGTC TAGAGTGTGC TATTATGGAG GAGTGTGGGA TGCCGCAGTG GCTCATCCGC 720

CTGTATCACC TTATAAGGTC TGCGTGGATC TTGCAGGCCC CGAAGGAGTC TCTGCGAGGG 780

TTTTGGAAGA AACACTCCGG TGAGCCCGGC ACTCTTCTAT GGAATACTGT CTGGAATATG 840

GCCGTTATTA CCCACTGTTA TGACTTCCGC GATTTTCAGG TGGCTGCCTT TAAAGGTGAT 900

GATTCGATAG TGCTTTGCAG TGAGTATCGT CAGAGTCCAG GAGCTGCTGT CCTGATCGCC 960

GGCTGTGGCT TGAAGTTGAA GGTAGATTTC CGCCCGATCG GTTTGTATGC AGGTGTTGTG 1020

GTGGCCCCCG GCCTTGGCGC GCTCCCTGAT GTTGTGCGCT TCGCCGGCCG GCTTACCGAG 1080

AAGAATTGGG GCCCTGGCCC TGAGCGGGCG GAGCAGCTCC GCCTCGCTGT TAGTGATTTC 1140

CTCCGCAAGC TCACGAATGT AGCTCAGATG TGTGTGGATG TTGTTTCCCG TGTTTATGGG 1200

GTTTCCCCTG GACTCGTTCA TAACCTGATT GGCATGCTAC AGGCTGTTGC TGATGGCAAG 1260

GCACATTTCA CTGAGTCAGT AAAACCAGTG CTCGA 1295

a second sequence (SEQ ID NO.5):

TCGAGCACTG GTTTTACTGA CTCAGTGAAA TGTGCCTTGC CATCAGCAAC AGCCTGTAGC 60

ATGCCAATCA GGTTATGAAC GAGTCCAGGG GAAACCCCAT AAACACGGGA AACAACATCC 120

ACACACATCT GAGCTACATT CGTGAGCTTG CGGAGGAAAT CACTAACAGC GAGGCGGAGC 180

TGCTCCGCCC GCTCAGGGCC AGGGCCCCAA TTCTTCTCGG TAAGCCGGCC GGCGAAGCGC 240

ACAACATCAG GGAGCGCGCC AAGGCCGGGG GCCACCACAA CACCTGCATA CAAACCGATC 300

GGGCGGAAAT CTACCTTCAA CTTCAAGCCA CAGCCGGCGA TCAGGACAGC AGCTCCTGGA 360

CTCTGACGAT ACTCACTGCA AAGCACTATC GAATCATCAC CTTTAAAGGC AGCCACCTGA 420

AAATCGCGGA AGTCATAACA GTGGGTAATA ACGGCCATAT TCCAGACAGT ATTCCATAGA 480

AGAGTGCCGG GCTCACCGGA GTGTTTCTTC CAAAACCCTC GCAGAGACTC CTTCGGGGCC 540

TGCAAGATCC ACGCAGACCT TATAAGGTGA TACAGGCGGA TGAGCCACTG CGGCATCCCA 600

CACTCCTCCA TAATAGCACA CTCTAGACCC AGAGAAAAGT TATTCTGGGT GGAGTCAAAC 660

TCAGAAAAGT CATTCTCAAA CACCATGGAT GCCTTTGCTG CGGCCACAGC CGCCGAGAAG 720

ACGGTGTCAT CAAAGGCATC ACCGTAAAAC ACACCCTGAG GGAGCAGGGC CAGAATAGCC 780

TTCTCAATAG CGCGGAACCA AGGGCCAAAG AGGGCGCAGA AGGTCTTGCT CCAGGCCGAG 840

ATGCCCTGGC CCACTTTACC ATGGGCAATG GTCTCACCTG TGGTGAACTT GTTACAATCT 900

TTCTGGAAGA AGGTGATCCT GGACACGTCA CGGTTGCAAA GATCAAGCTC AAGGACGGCG 960

GAGCCATCCT GGCCCTTCTC GACCATGGCC TCCACTAGCT CGTACAATTC ACAAGTTGTA 1020

ACCTGTACGG GGCCAATGGC CGGGATAAAA CGGGCGAGAG AGTCGCGAAC ATCAGAGTGG 1080

GAAGCATTGT AGAGCTTTGT GCGACCGCCG TAGCGGCCCA CGAGTGTGGA CAGCACGGCC 1140

TTGCGCTGGC TCGGGGCGGC CATGCGGCAG TGCACAATGT CTGTTAATTC AAATGTTACG 1200

ACACTATCAC AGGTGGTGAG CTCCTGGGGC AGGTAGAGAA GGCCCTGTTC GAGCTCGGGG 1260

CAGGGTGGTA GAACAGCTGC AACAGGGACA GGTCT 1295

a third sequence (SEQ ID NO.6):

AGGCAGACCA CATATGTGGT CGATGCC ATGGAGGCCC ATCAGTTTAT TAAGGCTCCT 57

GGCATCACTA CTGCTATTGA GCAGGCTGCT CTAGCAGCGG CCAACTCTGC CCTGGCGAAT 117

GCTGTGGTAG TTAGGCCTTT TCTCTCTCAC CAGCAGATTG AGATCCTCAT TAACCTAATG 177

CAACCTCGCC AGCTTGTTTT CCGCCCCGAG GTTTTCTGGA ATCATCCCAT CCAGCGTGTC 237

ATCCATAACG AGCTGGAGCT TTACTGCCGC GCCCGCTCCG GCCGCTGTCT TGAAATTGGC 297

GCCCATCCCC GCTCAATAAA TGATAATCCT AATGTGGTCC ACCGCTGCTT CCTCCGCCCT 357

GTTGGGCGTG ATGTTCAGCG CTGGTATACT GCTCCCACTC GCGGGCCGGC TGCTAATTGC 417

CGGCGTTCCG CGCTGCGCGG GCTTCCCGCT GCTGACCGCA CTTACTGCCT CGACGGGTTT 477

TCTGGCTGTA ACTTTCCCGC CGAGACTGGC ATCGCCCTCT ACTCCCTTCA TGATATGTCA 537

CCATCTGATG TCGCCGAGGC CATGTTCCGC CATGGTATGA CGCGGCTCTA TGCCGCCCTC 597

CATCTTCCGC CTGAGGTCCT GCTGCCCCCT GGCACATATC GCACCGCATC GTATTTGCTA 657

ATTCATGACG GTAGGCGCGT TGTGGTGACG TATGAGGGTG ATACTAGTGC TGGTTACAAC 717

CACGATGTCT CCAACTTGCG CTCCTGGATT AGAACCACCA AGGTTACCGG AGACCATCCC 777

CTCGTTATCG AGCGGGTTAG GGCCATTGGC TGCCACTTTG TTCTCTTGCT CACGGCAGCC 837

CCGGAGCCAT CACCTATGCC TTATGTTCCT TACCCCCGGT CTACCGAGGT CTATGTCCGA 897

TCGATCTTCG GCCCGGGTGG CACCCCTTCC TTATTCCCAA CCTCATGCTC CACTAAGTCG 957

ACCTTCCATG CTGTCCCTGC CCATATTTGG GACCGTCTTA TGCTGTTCGG GGCCACCTTG 1017

GATGACCAAG CCTTTTGCTG CTCCCGTTTA ATGACCTACC TTCGCGGCAT TAGCTACAAG 1077

GTCACTGTTG GTACCCTTGT GGCTAATGAA GGCTGGAATG CCTCTGAGGA CGCCCTCACA 1137

GCTGTTATCA CTGCCGCCTA CCTTACCATT TGCCACCAGC GGTATCTCCG CACCCAGGCT 1197

ATATCCAAGG GGATGCGTCG TCTGGAACGG GAGCATGCCC AGAAGTTTAT AACACGCCTC 1257

TACAGCTGGC TCTTCGAGAA GTCCGGCCGT GATTACATCC CTGGCCGTCA GTTGGAGTTC 1317

TACGCCCAGT GCAGGCGCTG GCTCTCCGCC GGCTTTCATC TTGATCCACG GGTGTTGGTT 1377

TTTGACGAGT CGGCCCCCTG CCATTGTAGG ACCGCGATCC GTAAGGCGCT CTCAAAGTTT 1437

TGCTGCTTCA TGAAGTGGCT TGGTCAGGAG TGCACCTGCT TCCTTCAGCC TGCAGAAGGC 1497

GCCGTCGGCG ACCAGGGTCA TGATAATGAA GCCTATGAGG GGTCCGATGT TGACCCTGCT 1557

GAGTCCGCCA TTAGTGACAT ATCTGGGTCC TATGTCGTCC CTGGCACTGC CCTCCAACCG 1617

CTCTACCAGG CCCTCGATCT CCCCGCTGAG ATTGTGGCTC GCGCGGGCCG GCTGACCGCC 1677

ACAGTAAAGG TCTCCCAGGT CGATGGGCGG ATCGATTGCG AGACCCTTCT TGGTAACAAA 1737

ACCTTTCGCA CGTCGTTCGT TGACGGGGCG GTCTTAGAGA CCAATGGCCC AGAGCGCCAC 1797

AATCTCTCCT TCGATGCCAG TCAGAGCACT ATGGCCGCTG GCCCTTTCAG TCTCACCTAT 1857

GCCGCCTCTG CAGCTGGGCT GGAGGTGCGC TATGTTGCTG CCGGGCTTGA CCATCGGGCG 1917

GTTTTTGCCC CCGGTGTTTC ACCCCGGTCA GCCCCCGGCG AGGTTACCGC CTTCTGCTCT 1977

GCCCTATACA GGTTTAACCG TGAGGCCCAG CGCCATTCGC TGATCGGTAA CTTATGGTTC 2037

CATCCTGAGG GACTCATTGG CCTCTTCGCC CCGTTTTCGC CCGGGCATGT TTGGGAGTCG 2097

GCTAATCCAT TCTGTGGCGA GAGCACACTT TACACCCGTA CTTGGTCGGA GGTTGATGCC 2157

GTCTCTAGTC CAGCCCGGCC TGACTTAGGT TTTATGTCTG AGCCTTCTAT ACCTAGTAGG 2217

GCCGCCACGC CTACCCTGGC GGCCCCTCTA CCCCCCCCTG CACCGGACCC TTCCCCCCCT 2277

CCCTCTGCCC CGGCGCTTGC TGAGCCGGCT TCTGGCGCTA CCGCCGGGGC CCCGGCCATA 2337

ACTCACCAGA CGGCCCGGCA CCGCCGCCTG CTCTTCACCT ACCCGGATGG CTCTAAGGTA 2397

TTCGCCGGCT CGCTGTTCGA GTCGACATGC ACGTGGCTCG TTAACGCGTC TAATGTTGAC 2457

CACCGCCCTG GCGGCGGGCT TTGCCATGCA TTTTACCAAA GGTACCCCGC CTCCTTTGAT 2517

GCTGCCTCTT TTGTGATGCG CGACGGCGCG GCCGCGTACA CACTAACCCC CCGGCCAATA 2577

ATTCACGCTG TCGCCCCTGA TTATAGGTTG GAACATAACC CAAAGAGGCT TGAGGCTGCT 2637

TATCGGGAAA CTTGCTCCCG CCTCGGCACC GCTGCATACC CGCTCCTCGG GACCGGCATA 2697

TACCAGGTGC CGATCGGCCC CAGTTTTGAC GCCTGGGAGC GGAACCACCG CCCCGGGGAT 2757

GAGTTGTACC TTCCTGAGCT TGCTGCCAGA TGGTTTGAGG CCAATAGGCC GACCCGCCCG 2817

ACTCTCACTA TAACTGAGGA TGTTGCACGG ACAGCGAATC TGGCCATCGA GCTTGACTCA 2877

GCCACAGATG TCGGCCGGGC CTGTGCCGGC TGTCGGGTCA CCCCCGGCGT TGTTCAGTAC 2937

CAGTTTACTG CAGGTGTGCC TGGATCCGGC AAGTCCCGCT CTATCACCCA AGCCGATGTG 2997

GACGTTGTCG TGGTCCCGAC GCGTGAGTTG CGTAATGCCT GGCGCCGTCG CGGCTTTGCT 3057

GCTTTTACCC CGCATACTGC CGCCAGAGTC ACCCAGGGGC GCCGGGTTGT CATTGATGAG 3117

GCTCCATCCC TCCCCCCTCA CCTGCTGCTG CTCCACATGC AGCGGGCCGC CACCGTCCAC 3177

CTTCTTGGCG ACCCGAACCA GATCCCAGCC ATCGACTTTG AGCACGCTGG GCTCGTCCCC 3237

GCCATCAGGC CCGACTTAGG CCCCACCTCC TGGTGGCATG TTACCCATCG CTGGCCTGCG 3297

GATGTATGCG AGCTCATCCG TGGTGCATAC CCCATGATCC AGACCACTAG CCGGGTTCTC 3357

CGTTCGTTGT TCTGGGGTGA GCCTGCCGTC GGGCAGAAAC TAGTGTTCAC CCAGGCGGCC 3417

AAGCCCGCCA ACCCCGGCTC AGTGACGGTC CACGAGGCGC AGGGCGCTAC CTACACGGAG 3477

ACCACTATTA TTGCCACAGC AGATGCCCGG GGCCTTATTC AGTCGTCTCG GGCTCATGCC 3537

ATTGTTGCTC TGACGCGCCA CACTGAGAAG TGCGTCATCA TTGACGCACC AGGCCTGCTT 3597

CGCGAGGTGG GCATCTCCGA TGCAATCGTT AATAACTTTT TCCTCGCTGG TGGCGAAATT 3657

GGTCACCAGC GCCCATCAGT TATTCCCCGT GGCAACCCTG ACGCCAATGT TGACACCCTG 3717

GCTGCCTTCC CGCCGTCTTG CCAGATTAGT GCCTTCCATC AGTTGGCTGA GGAGCTTGGC 3777

CACAGACCTG TCCCTGTTGC AGCTGTTCTA CCACCCTGCC CCGAGCTCGA ACAGGGCCTT 3837

CTCTACCTGC CCCAGGAGCT CACCACCTGT GATAGTGTCG TAACATTTGA ATTAACAGAC 3897

ATTGTGCACT GCCGCATGGC CGCCCCGAGC CAGCGCAAGG CCGTGCTGTC CACACTCGTG 3957

GGCCGCTACG GCGGTCGCAC AAAGCTCTAC AATGCTTCCC ACTCTGATGT TCGCGACTCT 4017

CTCGCCCGTT TTATCCCGGC CATTGGCCCC GTACAGGTTA CAACTTGTGA ATTGTACGAG 4077

CTAGTGGAGG CCATGGTCGA GAAGGGCCAG GATGGCTCCG CCGTCCTTGA GCTTGATCTT 4137

TGCAACCGTG ACGTGTCCAG GATCACCTTC TTCCAGAAAG ATTGTAACAA GTTCACCACA 4197

GGTGAGACCA TTGCCCATGG TAAAGTGGGC CAGGGCATCT CGGCCTGGAG CAAGACCTTC 4257

TGCGCCCTCT TTGGCCCTTG GTTCCGCGCT ATTGAGAAGG CTATTCTGGC CCTGCTCCCT 4317

CAGGGTGTGT TTTACGGTGA TGCCTTTGAT GACACCGTCT TCTCGGCGGC TGTGGCCGCA 4377

GCAAAGGCAT CCATGGTGTT TGAGAATGAC TTTTCTGAGT TTGACTCCAC CCAGAATAAC 4437

TTTTCTCTGG GTCTAGAGTG TGCTATTATG GAGGAGTGTG GGATGCCGCA GTGGCTCATC 4497

CGCCTGTATC ACCTTATAAG GTCTGCGTGG ATCTTGCAGG CCCCGAAGGA GTCTCTGCGA 4557

GGGTTTTGGA AGAAACACTC CGGTGAGCCC GGCACTCTTC TATGGAATAC TGTCTGGAAT 4617

ATGGCCGTTA TTACCCACTG TTATGACTTC CGCGATTTTC AGGTGGCTGC CTTTAAAGGT 4677

GATGATTCGA TAGTGCTTTG CAGTGAGTAT CGTCAGAGTC CAGGAGCTGC TGTCCTGATC 4737

GCCGGCTGTG GCTTGAAGTT GAAGGTAGAT TTCCGCCCGA TCGGTTTGTA TGCAGGTGTT 4797

GTGGTGGCCC CCGGCCTTGG CGCGCTCCCT GATGTTGTGC GCTTCGCCGG CCGGCTTACC 4857

GAGAAGAATT GGGGCCCTGG CCCTGAGCGG GCGGAGCAGC TCCGCCTCGC TGTTAGTGAT 4917

TTCCTCCGCA AGCTCACGAA TGTAGCTCAG ATGTGTGTGG ATGTTGTTTC CCGTGTTTAT 4977

GGGGTTTCCC CTGGACTCGT TCATAACCTG ATTGGCATGC TACAGGCTGT TGCTGATGGC 5037

AAGGCACATT TCACTGAGTC AGTAAAACCA GTGCTCGACT TGACAAATTC AATCTTGTGT 5097

CGGGTGGAAT GA ATAACATGTC TTTTGCTGCG CCCATGGGTT CGCGACCATG 5149

CGCCCTCGGC CTATTTTGTT GCTGCTCCTC ATGTTTTTGC CTATGCTGCC CGCGCCACCG 5209

CCCGGTCAGC CGTCTGGCCG CCGTCGTGGG CGGCGCAGCG GCGGTTCCGG CGGTGGTTTC 5269

TGGGGTGACC GGGTTGATTC TCAGCCCTTC GCAATCCCCT ATATTCATCC AACCAACCCC 5329

TTCGCCCCCG ATGTCACCGC TGCGGCCGGG GCTGGACCTC GTGTTCGCCA ACCCGCCCGA 5389

CCACTCGGCT CCGCTTGGCG TGACCAGGCC CAGCGCCCCG CCGTTGCCTC ACGTCGTAGA 5449

CCTACCACAG CTGGGGCCGC GCCGCTAA CCGCGGTCGC TCCGGCCCAT GACACCCCGC 5507

CAGTGCCTGA TGTCGACTCC CGCGGCGCCA TCTTGCGCCG GCAGTATAAC CTATCAACAT 5567

CTCCCCTTAC CTCTTCCGTG GCCACCGGCA CTAACCTGGT TCTTTATGCC GCCCCTCTTA 5627

GTCCGCTTTT ACCCCTTCAG GACGGCACCA ATACCCATAT AATGGCCACG GAAGCTTCTA 5687

ATTATGCCCA GTACCGGGTT GCCCGTGCCA CAATCCGTTA CCGCCCGCTG GTCCCCAATG 5747

CTGTCGGCGG TTACGCCATC TCCATCTCAT TCTGGCCACA GACCACCACC ACCCCGACGT 5807

CCGTTGATAT GAATTCAATA ACCTCGACGG ATGTTCGTAT TTTAGTCCAG CCCGGCATAG 5867

CCTCTGAGCT TGTGATCCCA AGTGAGCGCC TACACTATCG TAACCAAGGC TGGCGCTCCG 5927

TCGAGACCTC TGGGGTGGCT GAGGAGGAGG CTACCTCTGG TCTTGTTATG CTTTGCATAC 5987

ATGGCTCACT CGTAAATTCC TATACTAATA CACCCTATAC CGGTGCCCTC GGGCTGTTGG 6047

ACTTTGCCCT TGAGCTTGAG TTTCGCAACC TTACCCCCGG TAACACCAAT ACGCGGGTCT 6107

CCCGTTATTC CAGCACTGCT CGCCACCGCC TTCGTCGCGG TGCGGACGGG ACTGCCGAGC 6167

TCACCACCAC GGCTGCTACC CGCTTTATGA AGGACCTCTA TTTTACTAGT ACTAATGGTG 6227

TCGGTGAGAT CGGCCGCGGG ATAGCCCTCA CCCTGTTCAA CCTTGCTGAC ACTCTGCTTG 6287

GCGGCCTGCC GACAGAATTG ATTTCGTCGG CTGGTGGCCA GCTGTTCTAC TCCCGTCCCG 6347

TTGTCTCAGC CAATGGCGAG CCGACTGTTA AGTTGTATAC ATCTGTAGAG AATGCTCAGC 6407

AGGATAAGGG TATTGCAATC CCGCATGACA TTGACCTCGG AGAATCTCGT GTGGTTATTC 6467

AGGATTATGA TAACCAACAT GAACAAGATC GGCCGACGCC TTCTCCAGCC CCATCGCGCC 6527

CTTTCTCTGT CCTTCGAGCT AATGATGTGC TTTGGCTCTC TCTCACCGCT GCCGAGTATG 6587

ACCAGTCCAC TTATGGCTCT TCGACTGGCC CAGTTTATGT TTCTGACTCT GTGACCTTGG 6647

TTAATGTTGC GACCGGCGCG CAGGCCGTTG CCCGGTCGCT CGATTGGACC AAGGTCACAC 6707

TTGACGGTCG CCCCCTCTCC ACCATCCAGC AGTACTCGAA GACCTTCTTT GTCCTGCCGC 6767

TCCGCGGTAA GCTCTCTTTC TGGGAGGCAG GCACAACTAA AGCCGGGTAC CCTTATAATT 6827

ATAACACCAC TGCTAGCGAC CAACTGCTTG TCGAGAATGC CGCCGGGCAC CGGGTCGCTA 6887

TTTCCACTTA CACCACTAGC CTGGGTGCTG GTCCCGTCTC CATTTCTGCG GTTGCCGTTT 6947

TAGCCCCCCA CTCTGCGCTA GCATTGCTTG AGGATACCTT GGACTACCCT GCCCGCGCCC 7007

ATACTTTTGA TGATTTCTGC CCAGAGTGCC GCCCCCTTGG CCTTCAGGGC TGCGCTTTCC 7067

AGTCTACTGT CGCTGAGCTT CAGCGCCTTA AGATGAAGGT GGGTAAAACT CGGGAGTTGT 7127

AG TTTATTTGCT TGTGCCCCCC TTCTTTCTGT TGCTTATTTC TCATTTCTGC 7179

GTTCCGCGCT CCCTGA 7195

a fourth sequence (SEQ ID NO.10):

GCCATGGAGG CCCACCAGTT CATTAAGGCT CCTGGCATCA CTACTGCTAT TGAGCAAGCA 60

GCTCTAGCAG CGGCCAACTC CGCCCTTGCG AATGCTGTGG TGGTCCGGCC TTTCCTTTCC 120

CATCAGCAGG TTGAGATCCT TATAAATCTC ATGCAACCTC GGCAGCTGGT GTTTCGTCCT 180

GAGGTTTTTT GGAATCACCC GATTCAACGT GTTATACATA ATGAGCTTGA GCAGTATTGC 240

CGTGCTCGCT CGGGTCGCTG CCTTGAGATT GGAGCCCACC CACGCTCCAT TAATGATAAT 300

CCTAATGTCC TCCATCGCTG CTTTCTCCAC CCCGTCGGCC GGGATGTTCA GCGCTGGTAC 360

ACAGCCCCGA CTAGGGGACC TGCGGCGAAC TGTCGCCGCT CGGCACTTCG TGGTCTGCCA 420

CCAGCCGACC GCACTTACTG TTTTGATGGC TTTGCCGGCT GCCGTTTTGC CGCCGAGACT 480

GGTGTGGCTC TCTATTCTCT CCATGACTTG CAGCCGGCTG ATGTTGCCGA GGCGATGGCT 540

CGCCACGGCA TGACCCGCCT TTATGCAGCT TTCCACTTGC CTCCAGAGGT GCTCCTGCCT 600

CCTGGCACCT ACCGGACATC ATCCTACTTG CTGATCCACG ATGGTAAGCG CGCGGTTGTC 660

ACTTATGAGG GTGACACTAG CGCCGGTTAC AATCATGATG TTGCCACCCT CCGCACATGG 720

ATCAGGACAA CTAAGGTTGT GGGTGAACAC CCTTTGGTGA TCGAGCGGGT GCGGGGTATT 780

GGCTGTCACT TTGTGTTGTT GATCACTGCG GCCCCTGAGC CCTCCCCGAT GCCCTACGTT 840

CCTTACCCGC GTTCGACGGA GGTCTATGTC CGGTCTATCT TTGGGCCCGG CGGGTCCCCG 900

TCGCTGTTCC CGACCGCTTG TGCTGTCAAG TCCACTTTTC ACGCCGTCCC CACGCACATC 960

TGGGACCGTC TCATGCTCTT TGGGGCCACC CTCGACGACC AGGCCTTTTG CTGCTCCAGG 1020

CTTATGACGT ACCTTCGTGG CATTAGCTAT AAGGTAACTG TGGGTGCCCT GGTCGCTAAT 1080

GAAGGCTGGA ATGCCACCGA GGATGCGCTC ACTGCAGTTA TTACGGCGGC TTACCTCACA 1140

ATATGTCATC AGCGTTATTT GCGGACCCAG GCGATTTCTA AGGGCATGCG CCGGCTTGAG 1200

CTTGAACATG CTCAGAAATT TATTTCACGC CTCTACAGCT GGCTATTTGA GAAGTCAGGT 1260

CGTGATTACA TCCCAGGCCG CCAGCTGCAG TTCTACGCTC AGTGCCGCCG CTGGTTATCT 1320

GCCGGGTTCC ATCTCGACCC CCGCACCTTA GTTTTTGATG AGTCAGTGCC TTGTAGCTGC 1380

CGAACCACCA TCCGGCGGAT CGCTGGAAAA TTTTGCTGTT TTATGAAGTG GCTCGGTCAG 1440

GAGTGTTCTT GTTTCCTCCA GCCCGCCGAG GGGCTGGCGG GCGACCAAGG TCATGACAAT 1500

GAGGCCTATG AAGGCTCTGA TGTTGATACT GCTGAGCCTG CCACCCTAGA CATTACAGGC 1560

TCATACATCG TGGATGGTCG GTCTCTGCAA ACTGTCTATC AAGCTCTCGA CCTGCCAGCT 1620

GACCTGGTAG CTCGCGCAGC CCGACTGTCT GCTACAGTTA CTGTTACTGA AACCTCTGGC 1680

CGTCTGGATT GCCAAACAAT GATCGGCAAT AAGACTTTTC TCACTACCTT TGTTGATGGG 1740

GCACGCCTTG AGGTTAACGG GCCTGAGCAG CTTAACCTCT CTTTTGACAG CCAGCAGTGT 1800

AGTATGGCAG CCGGCCCGTT TTGCCTCACC TATGCTGCCG TAGATGGCGG GCTGGAAGTT 1860

CATTTTTCCA CCGCTGGCCT CGAGAGCCGT GTTGTTTTCC CCCCTGGTAA TGCCCCGACT 1920

GCCCCGCCGA GTGAGGTCAC CGCCTTCTGC TCAGCTCTTT ATAGGCACAA CCGGCAGAGC 1980

CAGCGCCAGT CGGTTATTGG TAGTTTGTGG CTGCACCCTG AAGGTTTGCT CGGCCTGTTC 2040

CCGCCCTTTT CACCCGGGCA TGAGTGGCGG TCTGCTAACC CATTTTGCGG CGAGAGCACG 2100

CTCTACACCC GCACTTGGTC CACAATTACA GACACACCCT TAACTGTCGG GCTAATTTCC 2160

GGTCATTTGG ATGCTGCTCC CCACTCGGGG GGGCCACCTG CTACTGCCAC AGGCCCTGCT 2220

GTAGGCTCGT CTGACTCTCC AGACCCTGAC CCGCTACCTG ATGTTACAGA TGGCTCACGC 2280

CCCTCTGGGG CCCGTCCGGC TGGCCCCAAC CCGAATGGCG TTCCGCAGCG CCGCTTACTA 2340

CACACCTACC CTGACGGCGC TAAGATCTAT GTCGGCTCCA TTTTCGAGTC TGAGTGCACC 2400

TGGCTTGTCA ACGCATCTAA CGCCGGCCAC CGCCCTGGTG GCGGGCTTTG TCATGCTTTT 2460

TTTCAGCGTT ACCCTGATTC GTTTGACGCC ACCAAGTTTG TGATGCGTGA TGGTCTTGCC 2520

GCGTATACCC TTACACCCCG GCCGATCATT CATGCGGTGG CCCCGGACTA TCGATTGGAA 2580

CATAACCCCA AGAGGCTCGA GGCTGCCTAC CGCGAGACTT GCGCCCGCCG AGGCACTGCT 2640

GCCTATCCAC TCTTAGGCGC TGGCATTTAC CAGGTGCCTG TTAGTTTGAG TTTTGATGCC 2700

TGGGAGCGGA ACCACCGCCC GTTTGACGAG CTTTACCTAA CAGAGCTGGC GGCTCGGTGG 2760

TTTGAATCCA ACCGCCCCGG TCAGCCCACG TTGAACATAA CTGAGGATAC CGCCCGTGCG 2820

GCCAACCTGG CCCTGGAGCT TGACTCCGGG AGTGAAGTAG GCCGCGCATG TGCCGGGTGT 2880

AAAGTCGAGC CTGGCGTTGT GCGGTATCAG TTTACAGCCG GTGTCCCCGG CTCTGGCAAG 2940

TCAAAGTCCG TGCAACAGGC GGATGTGGAT GTTGTTGTTG TGCCCACTCG CGAGCTTCGG 3000

AACGCTTGGC GGCGCCGGGG CTTTGCGGCA TTCACTCCGC ACACTGCGGC CCGTGTCACT 3060

AGCGGCCGTA GGGTTGTCAT TGATGAGGCC CCTTCGCTCC CCCCACACTT GCTGCTTTTA 3120

CATATGCAGC GTGCTGCATC TGTGCACCTC CTTGGGGACC CGAATCAGAT CCCCGCCATA 3180

GATTTTGAGC ACACCGGTCT GATTCCAGCA ATACGGCCGG AGTTGGTCCC GACTTCATGG 3240

TGGCATGTCA CCCACCGTTG CCCTGCAGAT GTCTGTGAGT TAGTCCGTGG TGCTTACCCT 3300

AAAATCCAGA CTACAAGTAA GGTGCTCCGT TCCCTTTTCT GGGGAGAGCC AGCTGTCGGC 3360

CAGAAGCTAG TGTTCACACA GGCTGCTAAG GCCGCGCACC CCGGATCTAT AACGGTCCAT 3420

GAGGCCCAGG GTGCCACTTT TACCACTACA ACTATAATTG CAACTGCAGA TGCCCGTGGC 3480

CTCATACAGT CCTCCCGGGC TCACGCTATA GTTGCTCTCA CTAGGCATAC TGAAAAATGT 3540

GTTATACTTG ACTCTCCCGG CCTGTTGCGT GAGGTGGGTA TCTCAGATGC CATTGTTAAT 3600

AATTTCTTCC TTTCGGGTGG CGAGGTTGGT CACCAGAGAC CATCGGTCAT TCCGCGAGGC 3660

AACCCTGACC GCAATGTTGA CGTGCTTGCG GCGTTTCCAC CTTCATGCCA AATAAGCGCC 3720

TTCCATCAGC TTGCTGAGGA GCTGGGCCAC CGGCCGGCGC CGGTGGCGGC TGTGCTACCT 3780

CCCTGCCCTG AGCTTGAGCA GGGCCTTCTC TATCTGCCAC AGGAGCTAGC CTCCTGTGAC 3840

AGTGTTGTGA CATTTGAGCT AACTGACATT GTGCACTGCC GCATGGCGGC CCCTAGCCAA 3900

AGGAAAGCTG TTTTGTCCAC GCTGGTAGGC CGGTATGGCA GACGCACAAG GCTTTATGAT 3960

GCGGGTCACA CCGATGTCCG CGCCTCCCTT GCGCGCTTTA TTCCCACTCT CGGGCGGGTT 4020

ACTGCCACCA CCTGTGAACT CTTTGAGCTT GTAGAGGCGA TGGTGGAGAA GGGCCAAGAC 4080

GGTTCAGCCG TCCTCGAGTT GGATTTGTGC AGCCGAGATG TCTCCCGCAT AACCTTTTTC 4140

CAGAAGGATT GTAACAAGTT CACGACCGGC GAGACAATTG CGCATGGCAA AGTCGGTCAG 4200

GGTATCTTCC GCTGGAGTAA GACGTTTTGT GCCCTGTTTG GCCCCTGGTT CCGTGCGATT 4260

GAGAAGGCTA TTCTATCCCT TTTACCACAA GCTGTGTTCT ACGGGGATGC TTATGACGAC 4320

TCAGTATTCT CTGCTGCCGT GGCTGGCGCC AGCCATGCCA TGGTGTTTGA AAATGATTTT 4380

TCTGAGTTTG ACTCGACTCA GAATAACTTT TCCCTAGGTC TTGAGTGCGC CATTATGGAA 4440

GAGTGTGGTA TGCCCCAGTG GCTTGTCAGG TTGTACCATG CCGTCCGGTC GGCGTGGATC 4500

CTGCAGGCCC CAAAAGAGTC TTTGAGAGGG TTCTGGAAGA AGCATTCTGG TGAGCCGGGC 4560

AGCTTGCTCT GGAATACGGT GTGGAACATG GCAATCATTG CCCATTGCTA TGAGTTCCGG 4620

GACCTCCAGG TTGCCGCCTT CAAGGGCGAC GACTCGGTCG TCCTCTGTAG TGAATACCGC 4680

CAGAGCCCAG GCGCCGGTTC GCTTATAGCA GGCTGTGGTT TGAAGTTGAA GGCTGACTTC 4740

CGGCCGATTG GGCTGTATGC CGGGGTTGTC GTCGCCCCGG GGCTCGGGGC CCTACCCGAT 4800

GTCGTTCGAT TCGCCGGACG GCTTTCGGAG AAGAACTGGG GGCCTGATCC GGAGCGGGCA 4860

GAGCAGCTCC GCCTCGCCGT GCAGGATTTC CTCCGTAGGT TAACGAATGT GGCCCAGATT 4920

TGTGTTGAGG TGGTGTCTAG AGTTTACGGG GTTTCCCCGG GTCTGGTTCA TAACCTGATA 4980

GGCATGCTCC AGACTATTGG TGATGGTAAG GCGCATTTTA CAGAGTCTGT TAAGCCTATA 5040

CTTGACCTTA CACACTCAAT TATGCACCGG TCTGAATGAA TAACATGTGG TTTGCTGCGC 5100

CCATGGGTTC GCCACCATGC GCCCTAGGCC TCTTTTGCTG TTGTTCCTCT TGTTTCTGCC 5160

TATGTTGCCC GCGCCACCGA CCGGTCAGCC GTCTGGCCGC CGTCGTGGGC GGCGCAGCGG 5220

CGGTACCGGC GGTGGTTTCT GGGGTGACCG GGTTGATTCT CAGCCCTTCG CAATCCCCTA 5280

TATTCATCCA ACCAACCCCT TTGCCCCAGA CGTTGCCGCT GCGTCCGGGT CTGGACCTCG 5340

CCTTCGCCAA CCAGCCCGGC CACTTGGCTC CACTTGGCGA GATCAGGCCC AGCGCCCCTC 5400

CGCTGCCTCC CGTCGCCGAC CTGCCACAGC CGGGGCTGCG GCGCTGACGG CTGTGGCGCC 5460

TGCCCATGAC ACCTCACCCG TCCCGGACGT TGATTCTCGC GGTGCAATTC TACGCCGCCA 5520

GTATAATTTG TCTACTTCAC CCCTGACATC CTCTGTGGCC TCTGGCACTA ATTTAGTCCT 5580

GTATGCAGCC CCCCTTAATC CGCCTCTGCC GCTGCAGGAC GGTACTAATA CTCACATTAT 5640

GGCCACAGAG GCCTCCAATT ATGCACAGTA CCGGGTTGCC CGCGCTACTA TCCGTTACCG 5700

GCCCCTAGTG CCTAATGCAG TTGGAGGCTA TGCTATATCC ATTTCTTTCT GGCCTCAAAC 5760

AACCACAACC CCTACATCTG TTGACATGAA TTCCATTACT TCCACTGATG TCAGGATTCT 5820

TGTTCAACCT GGCATAGCAT CTGAATTGGT CATCCCAAGC GAGCGCCTTC ACTACCGCAA 5880

TCAAGGTTGG CGCTCGGTTG AGACATCTGG TGTTGCTGAG GAGGAAGCCA CCTCCGGTCT 5940

TGTCATGTTA TGCATACATG GCTCTCCAGT TAACTCCTAT ACCAATACCC CTTATACCGG 6000

TGCCCTTGGC TTACTGGACT TTGCCTTAGA GCTTGAGTTT CGCAATCTCA CCACCTGTAA 6060

CACCAATACA CGTGTGTCCC GTTACTCCAG CACTGCTCGT CACTCCGCCC GAGGGGCCGA 6120

CGGGACTGCG GAGCTGACCA CAACTGCAGC CACCAGGTTC ATGAAAGATC TCCACTTTAC 6180

CGGCCTTAAT GGGGTAGGTG AAGTCGGCCG CGGGATAGCT CTAACATTAC TTAACCTTGC 6240

TGACACGCTC CTCGGCGGGC TCCCGACAGA ATTAATTTCG TCGGCTGGCG GGCAACTGTT 6300
TTATTCCCGC CCGGTTGTCT CAGCCAATGG CGAGCCAACC GTGAAGCTCT ATACATCAGT 6360
GGAGAATGCT CAGCAGGATA AGGGTGTTGC TATCCCCCAC GATATCGATC TTGGTGATTC 6420
GCGTGTGGTC ATTCAGGATT ATGACAACCA GCATGAGCAG GATCGGCCCA CCCCGTCGCC 6480
TGCGCCATCT CGGCCTTTTT CTGTTCTCCG AGCAAATGAT GTACTTTGGC TGTCCCTCAC 6540
TGCAGCCGAG TATGACCAGT CCACTTACGG GTCGTCAACT GGCCCGGTTT ATATCTCGGA 6600
CAGCGTGACT TTGGTGAATG TTGCGACTGG CGCGCAGGCC GTAGCCCGAT CGCTTGACTG 6660
GTCCAAAGTC ACCCTCGACG GGCGGCCCCT CCCGACTGTT GAGCAATATT CCAAGACATT 6720
CTTTGTGCTC CCCCTTCGTG GCAAGCTCTC CTTTTGGGAG GCCGGCACAA CAAAAGCAGG 6780
TTATCCTTAT AATTATAATA CTACTGCTAG TGACCAGATT CTGATTGAAA ATGCTGCCGG 6840
CCATCGGGTC GCCATTTCAA CCTATACCAC CAGGCTTGGG GCCGGTCCGG TCGCCATTTC 6900
TGCGGCCGCG GTTTTGGCTC CACGCTCCGC CCTGGCTCTG CTGGAGGATA CTTTTGATTA 6960
TCCGGGGCGG GCGCACACAT TTGATGACTT CTGCCCTGAA TGCCGCGCTT TAGGCCTCCA 7020
GGGTTGTGCT TTCCAGTCAA CTGTCGCTGA GCTCCAGCGC CTTAAAGTTA AGGTGGGTAA 7080
AACTCGGGAG TTGTAGTTTA TTTGGCTGTG CCCACCTACT TATATCTGCT GATTTCCTTT 7140
ATTTCCTTTT TCTCGGTCCC GCGCTCCCTG A 7171

or a fifth sequence (SEQ ID NO.12):

CGGGCCCCGT ACAGGTCACA ACCTGTGAGT TGTACGAGCT AGTGGAGGCC ATGGTCGAGA 60
AAGGCCAGGA TGGCTCCGCC GTCCTTGAGC TCGATCTCTG CAACCGTGAC GTGTCCAGGA 120
TCACCTTTTT CCAGAAAGAT TGCAATAAGT TCACCACGGG AGAGACCATC GCCCATGGTA 180
AAGTGGGCCA GGGCATTTCG GCCTGGAGTA AGACCTTCTG TGCCCTTTTC GGCCCCTGGT 240
TCCGTGCTAT TGAGAAGGCT ATTCTGGCCC TGCTCCCTCA GGGTGTGTTT TATGGGGATG 300
CCTTTGATGA CACCGTCTTC TCGGCGCGTG TGGCCGCAGC AAAGGCGTCC ATGGTGTTTG 360
AGAATGACTT TTCTGAGTTT GACTCCACCC AGAATAATTT TTCCCTGGGC CTAGAGTGTG 420
CTATTATGGA GAAGTGTGGG ATGCCGAAGT GGCTCATCCG CTTGTACCAC CTTATAAGGT 480
CTGCGTGGAT CCTGCAGGCC CCGAAGGAGT CCCTGCGAGG GTGTTGGAAG AAACACTCCG 540
GTGAGCCCGG CACTCTTCTA TGGAATACTG TCTGGAACAT GGCCGTTATC ACCCATTGTT 600
ACGATTTCCG CGATTTGCAG GTGGCTGCCT TTAAAGGTGA TGATTCGATA GTGCTTTGCA 660
GTGAGTACCG TCAGAGTCCA GGGGCTGCTG TCCTGATTGC TGGCTGTGGC TTAAAGCTGA 720

AGGTGGGTTT CCGTCCGATT GGTTTGTATG CAGGTGTTGT GGTGACCCCC GGCCTTGGCG 780

CGCTTCCCGA CGTCGTGCGC TTGTCCGGCC GGCTTACTGA GAAGAATTGG GGCCCTGGCC 840

CTGAGCGGGC GGAGCAGCTC CGCCTTGCTG TGCG 874

or a sequence complementary thereto.

14. A kit comprising, in a container or separate containers, a pair of single-strand primers derived from nonhomologous regions of opposite strands of a DNA duplex fragment derived from an enterically transmitted viral hepatitis agent whose genome contains a region which is homologous to the 1.33 kb DNA EcoRI insert present in plasmid pTZKF1(ET1.1) carried in E. coli strain BB4 and having ATCC deposit no. 67717.

15. The kit of claim 15, which are derived from opposite strands of the EcoRI duplex insert in said plasmid.

16. A method for detecting the presence of an enterically transmitted nonA/nonB hepatitis viral agent in a biological sample, comprising

preparing a mixture of duplex DNA fragments derived from the sample,

denaturing the duplex fragments,

adding to the denatured DNA fragments, a pair of single-strand primers derived from nonhomologous regions of opposite strands of a DNA duplex fragment derived from an enterically transmitted viral hepatitis agent whose genome contains a region which is homologous to the 1.33 kb DNA EcoRI insert present in plasmid pTZKF1(ET1.1) carried in E. coli strain BB4, and having ATCC deposit no. 67717,

hybridizing said primers to homologous-sequence region of opposite strands of such duplex DNA

fragments derived from enterically transmitted nonA/nonB hepatitis agent,

reacting the primed fragment strands with DNA polymerase in the presence of DNA nucleotides, to form new DNA duplexes containing the primer sequences, and

repeating said denaturing, adding, hybridizing and reacting steps, until a desired degree of amplification of sequences is achieved.

17. The method of claim 16, wherein the primers are derived from opposite strands of the EcoRI duplex insert in said plasmid.

18. The method of claim 16, for detecting the presence of viral agent in a sample of cultured cells infected with the agent.

19. A vaccine for immunizing an individual against enterically transmitted nonA/nonB hepatitis viral agent comprising, in a pharmacologically acceptable adjuvant, a recombinant protein derived from an enterically transmitted nonA/nonB viral hepatitis agent whose genome contains a region which is homologous to the 1.33 kb DNA EcoRI insert present in plasmid pTZ-RF1(ET1.1) carried in E. coli strain BB4, and having ATCC deposit no. 67717.

20. The vaccine of claim 19, wherein the protein is derived from the EcoRI insert in said plasmid.

21. A vaccine for immunizing an individual against HEV comprising, in a pharmacologically acceptable adjuvant, a protein encoded by genetic sequence 406.3-2 or 406.4-2 or a fragment thereof.

22. In a method of isolating an enterically transmitted nonA/nonB viral agent or a nucleic acid fragment produced by the agent, an improvement which

comprises: utilizing, as a source of said agent, bile obtained from a human or cynomolgus monkey having an active infection of enterically transmitted non-A/non-B hepatitis.

23. The method of claim 22, wherein the bile is obtained from an infected cynomolgus monkey.

24. Human polyclonal anti-serum obtained from a human immunized with a protein derived form an enterically transmitted non-A/non-B viral hepatitis agent whose genome contains a region which is homologous to the 1.33 kb DNA EcoRI insert present in plasmid pTZKF1(ET1.1) carried in E. coli strain BB4 and having ATCC deposit no. 67717.